JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-III Semester (ECE)

COURSE CODE (CREDITS): 25B11EC311 (4) MAX. MARKS: 15

COURSE NAME: Signals & Systems

COURSE INSTRUCTORS: Dr. Vikas Baghel MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*

(b) The candidate is allowed to make Suitable numeric assumptions wherever required

for solving problems

Q.No	Question	CO	Marks
Q1	For given $x_1[n] = e^{j20n}$ and $x_2[n] = e^{(-2+j)n}$, find whether $x_1[n] + x_2[n]$ is periodic or not. If yes then find the fundamental period.	CO1	[3]
Q2	Given the discrete-time signal $x[n] = u[n+2] - 3u[n-1]$, generate $x(3-4n)$ from $x(n)$. Write a step-by-step procedure to obtain it and draw (sketch) each intermediate signal.	CO1	[3]
Q3	Whether given signal is energy or power signal $x(n) = 5\cos(0.2\pi n)$. Also, calculate the corresponding energy and power values.	CO1	[3]
Q4	The response $h(t)$ of a linear time invariant system to an impulse $\delta(t)$, under initially relaxed condition is $h(t) = e^{-t} - e^{-2t}$. Find the response of this system for a unit step input.	CO2	[3]
Q5	The input $x(t)$ and output $y(t)$ of a system are related as $y(t) = \int_{-\infty}^{\infty} \cos(3\tau)\, x(t-\tau)\, d\tau$. Find this system is time varying/time invariant & stable/unstable.	CO2	[3]